

UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF WASHINGTON  
AT TACOMA

PATRICK S DRAGOS,

Plaintiff,

v.

MICHAEL G CORNEA, et al.,

Defendants.

Case No. C19-1338 JCC-TLF

ORDER ON PLAINTIFF'S MOTION  
IN LIMINE

This matter comes before the Court on Plaintiff's Motion in Limine to Exclude Bradley Probst. Dkts. 65, 70. Plaintiff argues that evidence to be offered by a defense expert witness, Bradley Probst, is inadmissible under FREV 702 and *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993). Dkt. 70. In addition, plaintiff argues that even if the Court decides the FREV 702 criteria are met, the evidence should nonetheless be excluded as more prejudicial than probative under FREV 403. *Id.*

**A. FACTS**

Plaintiff brings this negligence action alleging that he suffered significant injuries arising from an automobile collision with defendant, occurring in Seattle, on October 8, 2016. Dkt. 1-1. In the Answer, the defense admits they rear-ended plaintiff's vehicle. Dkt. 39, Amended Answer, at 2, ll. 10-11.

Plaintiff's motion in limine challenges expert evidence defendants seek to have the jury consider – the proffered expert is Bradley Probst, whose proposed testimony

1 would provide information to the jury about biomechanical forces. Dkt. 70, Defendant  
2 Cornea's Response in Opposition to Plaintiff's Motion in Limine, at 2, ll. 9-15; Dkt. 72,  
3 Decl. of Bradley Probst, at 6-8, 14-15, 23 ¶¶ 8-11, 16, 18.

4 According to the defense, Bradley Probst would not offer medical evidence. Dkt.  
5 70 at 6-10; Dkt. 72 at 7. The defense has provided the expert report and declaration of  
6 Bradley Probst. Dkt. 72, 72-1. The defendant contends that Bradley Probst is qualified  
7 to give relevant opinion evidence concerning biomechanics of a collision, and asserts  
8 this would be probative to a material issue in this case – "to explain the biomechanics of  
9 the subject accident, as they relate to Plaintiff's alleged hip injury." Dkt. 70 at 11. And,  
10 the defendant contends that if the Court excludes the expert evidence of Probst, then  
11 the Court must also exclude plaintiff's testimony concerning subjective assessment of  
12 the force of the impact. Dkt. 70 at 12-13.

13 As described by Probst, "[m]y methodology in the Dragos matter was to evaluate  
14 the severity of the subject incident in terms of the forces and accelerations experiences  
15 [sic] by the Dragos vehicle, relate those to the magnitude and direction of forces applied  
16 to Mr. Dragos during the subject incident, and evaluate his motion in the context of the  
17 subject incident and available restraint and safety systems available in the subject  
18 vehicle." Dkt. 72 at 6, ll. 16-20. In addition, Probst states that, "my opinions and analysis  
19 pertain to these specific areas which deal with human movement (kinematics), forces  
20 (kinetics), anatomy, and physiology"; and "I will not testify about whether there was any  
21 injury to Mr. Dragos, but rather will testify about the forces and the biomechanical limits  
22 involved in the subject motor vehicle collision, in consideration of the safety equipment  
23 available and utilized by Mr. Dragos, and compare them to personal activities of daily  
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1 living of Mr. Dragos as well as the general population.” Dkt. 72 at 7-8, ¶ 10, ll. 13-15 and  
2 ¶ 11.

### 3 **B. ANALYSIS**

4 Under FREV 702, as interpreted by the United States Supreme Court in a trio of  
5 cases, the district court has broad discretion to assess relevance and reliability of expert  
6 testimony. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993); *General Elec. Co.*  
7 *v. Joiner*, 522 U.S. 136 (1997); *Kumho Tire Co. Ltd. v. Carmichael*, 526 U.S. 137  
8 (1999). The trial court acts as a gatekeeper to ensure that proffered expert testimony is  
9 both relevant and reliable. *Kumho Tire Co. Ltd. v. Carmichael*, at 147. Broad discretion  
10 is given to the trial court to admit or exclude expert testimony; expert evidence is  
11 properly excluded where “foundational facts demonstrating relevancy . . . are not  
12 sufficiently established. . . .” *Trevino v. Gates*, 99 F.3d 911, 922 (9th Cir. 1996) (internal  
13 citations omitted).

14 The district court screens the proffered expert evidence by determining under  
15 FREV 104(a)<sup>1</sup> whether the expert evidence is scientific knowledge, and whether the  
16 expert evidence will assist the trier of fact to understand or determine a fact that is in  
17 issue for the specific claims and defenses. *Daubert v. Merrell Dow Pharm., Inc.*, at 592-  
18 93. The inquiry must be connected to the specific facts presented in the case. *Kumho*  
19 *Tire Co. Ltd. v. Carmichael*, at 150. Under Rule 702 of the Federal Rules of Evidence,  
20 an expert witness who is “qualified. . . by knowledge, skill, experience, training, or  
21 education,” is allowed to testify when: “(a) the expert’s scientific, technical, or other  
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23 <sup>1</sup> FREV 104(a) provides: “The court must decide any preliminary question about whether a witness is  
24 qualified, a privilege exists, or evidence is admissible. In so deciding, the court is not bound by evidence  
25 rules, except those on privilege.”

1 specialized knowledge will help the trier of fact to understand the evidence or to  
2 determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the  
3 testimony is the product of reliable principles and methods; and (d) the expert has  
4 reliably applied the principles and methods to the facts of the case.” FREV 702.

5 The court conducts a “preliminary assessment of whether the reasoning or  
6 methodology underlying the testimony is scientifically valid and of whether that  
7 reasoning or methodology properly can be applied to the facts in issue. . . . Many  
8 factors will bear on the inquiry, and . . . [there is not] a definitive checklist or test.”  
9 *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 592-593.

10 The flexible inquiry boils down to “scientific validity – and thus the evidentiary  
11 relevance and reliability – of the principles that underlie a proposed submission.”  
12 *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 594-95. And, the district court  
13 conducts this review of the proffered evidence on scientific evidence as well as  
14 evidence that is “non-scientific” – “‘technical’ and ‘other specialized knowledge’”. *Kumho*  
15 *Tire Co. Ltd. v. Carmichael*, at 526 U.S. 137, 141.

16 **1. The district court has discretion to decide admissibility on the record**  
17 **submitted by the parties without conducting an evidentiary hearing.**

18 Under FREV 104(a) and 702, the district court has broad latitude regarding the  
19 decision whether to admit expert testimony, and also with respect to the procedures by  
20 which to assess reliability. *United States v. Alatorre*, 222 F.3d 1098, 1104-1105 (9th Cir.  
21 2000). “The district court has discretion whether to hold a *Daubert* hearing in  
22 determining whether to admit expert testimony.” *Millenkamp v. Davisco Foods Int’l, Inc.*,  
23 562 F.3d 971, 979 (9th Cir. 2009). An evidentiary hearing will not be necessary if the  
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1 parties' "briefing on [the expert's] scientific expertise and proposed testimony" gives the  
2 district court an "adequate record from which the court could make its ruling" on the  
3 admissibility of the proposed evidence. *Id.*

4 An evidentiary hearing on reliability under FREV 702 is not required if the  
5 proposed evidence is "unscientific speculation offered by a genuine scientist". *Kirstein v.*  
6 *Parks Corp.*, 159 F.3d 1065, 1067-1069 (7th Cir. 1998) (Even though the expert was  
7 well-qualified, he did not conduct any testing on the products in question and therefore  
8 trial court properly excluded the evidence after summary judgment briefing and  
9 declarations but without a full evidentiary hearing). If the district court excludes the  
10 evidence because it is more prejudicial than probative under FREV 403, this is an  
11 independent basis for excluding the proffered evidence, and the court is not required to  
12 also analyze the admissibility under FREV 702. *United State v. Benavidez-Benavidez*,  
13 217 F.3d 720, 725-726 (9th Cir. 2000) (polygraph excluded as unduly prejudicial under  
14 ER 403).

15 If the district court holds an evidentiary hearing under FREV 702, it may occur  
16 before trial or during trial; in some circumstances, the expert's qualifications may be  
17 explored in voir dire of the witness during trial with the jury present. *See, United States*  
18 *v. Alatorre*, 222 F.3d 1098, 1104-1105 (9th Cir. 2000) (jury present). Although there is  
19 not a bright-line rule about the precise type of hearing or timing of the hearing, it is  
20 important for the district court to conduct an appropriate inquiry, and make a sufficient  
21 record of the findings and reasoning. *Barabin v. AstenJohnson, Inc.*, 740 F.3d 457, 463-  
22 464 (9th Cir. 2014) (en banc) (trial court abused its discretion by allowing expert  
23 testimony into evidence without first making a finding regarding relevancy or reliability  
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1 under *Daubert*, trial court's decision to admit expert evidence without any inquiry on the  
2 record was reversible error), *overruled on other grounds*, *U.S. v. Bacon*, 979 F.3d 766,  
3 769-770 (9th Cir. 2020) (en banc) (interpreting 28 U.S.C. § 2106 and holding that the  
4 remedy for harmful error concerning FREV 702 may be a new trial, or a limited remand).  
5 In a close case, the district court should allow the jury to decide difficult factual issues,  
6 "relying on the safeguards of the adversary system . . . to 'attack[ ] shaky but admissible  
7 evidence.'" *Hardeman v. Monsanto Company*, 997 F.3d 941, 962 (9th Cir. 2021)  
8 (internal citations omitted).

9 In this case, during oral argument, the parties agreed no evidentiary hearing  
10 would be required. The parties have briefed the issue and provide a factual record that  
11 allows the court to analyze the issue of admissibility without conducting an evidentiary  
12 hearing. *Millenkamp v. Davisco Foods Int'l, Inc.*, 562 F.3d 971, 979 (9th Cir. 2009).

13 The defense has submitted an expert report and a declaration of the proposed  
14 expert witness. Dkt. 72, 72-1. The proffered expert's credentials are included in the  
15 report and the declaration. *Id.*

16 Mr. Probst's methodology, and the research findings and publications that the  
17 expert has relied upon, are described in detail (although some of the studies and  
18 articles referenced by Mr. Probst have not been included by the parties in the Court's  
19 record; the Court has provided those by hyperlink or by appendix). This is a sufficient  
20 factual record for the district court to conduct the inquiry required under FREV 104(a),  
21 702, and 403.

22 Plaintiff argues Mr. Probst has insufficient educational credentials, experience, or  
23 training regarding medical areas of expertise for which only a medical doctor would be  
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1 qualified. Dkt. 65 at 5-13. The Court need not evaluate Mr. Probst's credentials  
2 regarding the medical analysis, because even if the Court assumes -- for purposes of  
3 analysis under FREV 104(a), 702, and 403 -- that Mr. Probst is a qualified expert, the  
4 methodology he uses is not reliable.

5 **2. The proffered evidence is not reliable and does not have scientific**  
6 **validity.**

7 To determine if scientific testimony is based on scientific methodology and  
8 reliable, this Court may consider the following non-exclusive factors: (1) whether the  
9 theory or technique can be, and has been, tested; (2) whether the theory or technique  
10 has been peer reviewed and published; (3) the known or potential error rate; and (4)  
11 whether the theory or technique has been generally accepted in the relevant scientific  
12 community. *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579, 593-594  
13 (1993). The Court's evaluation of the reliability of evidence "should be applied with a  
14 'liberal thrust' favoring admission." *Hardeman v. Monsanto Company*, 997 F.3d 941,  
15 960 (9th Cir. 2021) (quoting *Messick v. Novartis Pharms. Corp.*, 747 F.3d 1193, 1196  
16 (9th Cir. 2014)).

17 **• Mr. Probst's specific methodology for energy-based crush analysis is**  
18 **not validated.**

19 In the present case, the defendant's expert witness, Bradley Probst, uses an  
20 energy-based crush analysis to determine the change in speed of the defendant's  
21 vehicle, and therefore energy imparted to the plaintiff's vehicle, at the time of the  
22 collision. Dkt. 72-1, Exhibit A, at 2, 5-7. The change in speed, a parameter called Delta-  
23 V, is then used to determine the magnitude of forces in the collision. *Id.*

1 To perform the energy crush analysis, Mr. Probst: (1) selected a 10 m.p.h. trial  
2 speed for the defendant's vehicle; (2) simulated the collision in EDCRASH, a vehicle  
3 collision reconstruction software; (3) compared EDCRASH-generated estimates of the  
4 deformation to the defendant's vehicle with photos of the actual damage to both  
5 vehicles; and (4) concluded the defendant's vehicle was traveling less than 10 mph. *Id.*  
6 *EDCRASH*, Engineering Dynamics Company, [https://www.edccorp.com/index.php/hve-](https://www.edccorp.com/index.php/hve-software/edcrash)  
7 [software/edcrash](https://www.edccorp.com/index.php/hve-software/edcrash) (last visited July 6, 2021). Mr. Probst then calculated the force  
8 applied to the plaintiff's vehicle by the defendant's vehicle. Dkt. 72-1, Exhibit A, at 2, 7.

9 The Court must first evaluate whether an energy-based crush analysis is a  
10 reliable methodology by which to determine the speed of vehicles in a collision. An  
11 energy crush analysis uses the measured deformation to a vehicle to calculate the total  
12 energy in a vehicle collision, the force applied to each vehicle, and ultimately the  
13 change in speed of each vehicle, Delta-V, due to the collision. Shusake Numata, et al.  
14 *Validation of Crush Energy Calculation Methods for Use in Accident Reconstructions by*  
15 *Finite Element Analysis*, 6(2) SAE Int'l J. of Transp. Safety 133, 133-136 (2018)<sup>2</sup>.

16 Automotive researchers and the National Highway Traffic Safety Administration  
17 have used energy-based crush analysis to determine the energy in a collision event,  
18 indicating the mathematical and physical principles of this type of analysis are widely  
19 used and valid. *Terry Day & Randall Hargens, Difference Between EDCRASH and*  
20 *CRASH3*, SAE Technical Paper (1985).

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23 <sup>2</sup> This article was included as research relied on by Mr. Probst but it was not included in the record. The  
24 Court has provided it as an appendix to this order.  
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1 In addition to the mathematical and scientific principles that underpin an expert's  
2 testimony, the court must also evaluate the methodology used by the expert. *City of*  
3 *Pomona v. SQM North America Corp.*, 750 F.3d 1036, 1044 (9th Cir. 2014). Mr. Probst  
4 is not offering testimony based on his own calculations of the energy present in the  
5 collision; instead, he determines the forces present in the collision by entering data into  
6 EDCRASH, a collision reconstruction software. Dkt. 72-1 Exhibit A at 6-7. Therefore,  
7 both EDCRASH and the method by which Mr. Probst uses EDCRASH to determine the  
8 forces present in a collision must be validated.

9 The references provided in Mr. Probst's report generally establish the reliability of  
10 EDCRASH to calculate Delta-V in one or two vehicle collisions if measured vehicle  
11 deformation data is input to determine the severity of a collision. Engineering Dynamics  
12 Corporation, EDCRASH Collision Reconstruction User Manual 1-1 (6<sup>th</sup> ed. 2006)<sup>3</sup>; see  
13 Terry Day & Randall Hargens, *Further Validation of EDCRASH using RICSAC Staged*  
14 *Collisions*, SAE Technical Paper (1989) (using staged collisions to validate collision  
15 parameters calculated by EDCRASH)<sup>4</sup>.

16 The Delta-V parameter, whether calculated by EDCRASH or another means, is  
17 an accepted and validated measure of the severity of a collision. Dkt. 72-1, Exhibit A at  
18 6-7. Published and peer-reviewed studies have shown that EDCRASH can reliably use  
19 measured deformation data to calculate the severity of a vehicle collision and the

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21 <sup>3</sup> <https://www.edccorp.com/index.php/support-learning/library/manuals?download=255:edcrash>

22 <sup>4</sup> The articles titled *Difference Between EDCRASH and CRASH3* and *Further Validation of EDCRASH*  
23 *Using RICSAC Staged Collisions* are available from the Engineering Dynamics Corporation, the creators  
24 of the EDCRASH software, at <https://www.edccorp.com/index.php/support-learning/library/validation>. See  
25 also, <https://www.edccorp.com/library/TechRefPdfs/EDC-0007.pdf>

1 mathematics and science underlying these calculations are valid, peer reviewed, and  
2 accepted by the vehicle collision analysis community.

3 Although the EDCRASH program is a validated method of determining the Delta-  
4 V parameter in a vehicle collision, the EDCRASH validation performed by Day and  
5 Hargens used vehicles with bumpers and safety features significantly different than  
6 those found on the vehicles in the present case. The subject vehicles in the present  
7 case are a 2011 Audi A8 and a 2015 Subaru Outback. Dkt. 72-1, Exhibit A at 15. The  
8 vehicles used in the Day and Hargens EDCRASH validation study were a 1974  
9 Chevrolet Malibu, 1974 Ford Pinto, 1974 Chevrolet Chevelle, 1974 Ford Torino, 1974  
10 Honda Civic, and 1974 Volkswagen Rabbit. Terry Day & Randall Hargens, *Further*  
11 *Validation of EDCRASH using RICSAC Staged Collisions*, SAE Technical Paper 139,  
12 140 (1989).

13 Between 1974 and 2011, there have been changes in bumper design,  
14 construction, and materials and passenger car construction has transitioned from a  
15 body around a frame to a unibody construction. John Smith & Christina E. Smith,  
16 *Advances in Understanding of Rear Impact Collision – Updating Physics, Biomechanics*  
17 *and Statistics*, Trial Talk 21, 21 (2009)<sup>5</sup>. The changes in bumper and car construction  
18 from 1974 to 2011 lower the overall confidence that EDCRASH is an adequately peer  
19 reviewed software that has been sufficiently tested.

20 The defendant has provided no validation to support Mr. Probst's method of  
21 using EDCRASH. The report provided by Mr. Probst shows he input a Delta-V value of  
22 10 m.p.h. and used EDCRASH to calculate the deformation expected on the  
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24 <sup>5</sup> Dkt. 66, Ex. 5 at 149.

1 defendant's Subaru Outback. Dkt. 72-1 Exhibit A at 6-7. Specifically, Mr. Probst states,  
2 "[a]n energy crush analysis indicates that a single 10 mile-per-hour flat barrier impact to  
3 the front of an exemplar Subaru Outback would result in significant and visibly  
4 noticeable crush...with a residual crush of 2.25 inches." *Id.* However, the accuracy and  
5 reliability of the EDCRASH program was established by inputting measured deformation  
6 data to calculate Delta-V and comparing the Delta-V output to measured vehicle  
7 velocities. See Terry Day & Randall Hargens, *Further Validation of EDCRASH using*  
8 *RICSAC Staged Collisions*, SAE Technical Paper (1989) (using EDCRASH to calculate  
9 collision parameters based on measured deformation data). Mr. Probst used EDCRASH  
10 to "reverse calculate" vehicle deformation from a selected Delta-V. Dkt. 72-1 Exhibit A at  
11 6-7.

12 In addition to using EDCRASH in a way that is not validated, Mr. Probst is also  
13 using EDCRASH in a way that is not consistent with the EDCRASH program design.  
14 The report does not specify whether Mr. Probst is using the most recent EDCRASH  
15 version 7 and references the latest manual (edition 6) available from the Engineering  
16 Dynamics Corporation. Even assuming he is using the most recent version, Mr. Probst's  
17 report indicates he input a Delta-V and reviewed a damage profile produced by  
18 EDCRASH. Dkt. 72-1, Exhibit A, at 6. However, the EDCRASH user manual lists  
19 damage profiles as a program input and Delta-V as a program output. EDCRASH  
20 Collision Reconstruction User Manual 1-2 (6th ed. 2006). The manual also directs the  
21 user to assign the damage profiles to the vehicles to reconstruct the collision event. *Id.*  
22 at 5-12. The EDCRASH program does generate a damage profile report; however, the  
23 user manual states the calculated damage report is "very useful for confirming the  
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1 damage data were entered properly.” *Id.* at 3-13. EDCRASH does not appear to be  
2 designed to perform the analysis done by Mr. Probst, specifically the software is not  
3 designed to calculate vehicle damage based on an input of Delta-V and the EDCRASH  
4 user manual does not direct the use of the program in this fashion.

5 Furthermore, EDCRASH validation has been performed with physically  
6 measured deformation and not deformation determined by photographs and repair  
7 estimates. Mr. Probst’s report states that “the severity of the incident was analyzed by  
8 using photographic reproductions and available repair estimates of the subject Audi A8  
9 and . . . Subaru Outback.” Dkt. 72-1, Exhibit A, at 4. However, the validation study  
10 performed by Day and Hargens used physically measured vehicle deformations that  
11 resulted from staged two car collisions. Terry Day & Randall Hargens, *Further*  
12 *Validation of EDCRASH using RICSAC Staged Collisions*, SAE Technical Paper 139,  
13 139 (1989). The laboratory that performed the two car collisions used by Day and  
14 Hargens was able to measure vehicle deformation to 1/10” accuracy. See Norris  
15 Shoemaker, *Research Input for Computer Simulations of Automobile Collisions, Vol. II.*,  
16 CALSPAN Corporation Advanced Technology Center (1978) (providing multiple  
17 deformation measurements to 1/10” accuracy of vehicle deformation after staged  
18 collisions)<sup>6</sup>. Given EDCRASH was validated using relatively precisely measured data, it  
19 is impossible to conclude the program would perform accurate determinations of Delta-  
20 V using inputs from a photo and repair bill.

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24 <sup>6</sup> This article was cited by a study that Mr. Probst references in his report. The parties have not included it  
25 in the record, but the Court has provided it as an appendix to this order.

1 Mr. Probst contends it is accepted that photographs can provide precise  
2 deformation data that can be used to effectively in collision analysis software. Dkt. 72 at  
3 15. Included in his statements are the quotes from published works explaining that in  
4 post-collision analysis “[a] comprehensive and objective determination of the vehicle-  
5 related aspects is absolutely necessary, such as photographs of the vehicles involved  
6 and a listing of damaged car parts” and “reconstructionist are occasionally asked to  
7 determine deformation depths from one or more photographs.” *Id.* These quotes make it  
8 clear that photographs and repair information can be part of an analysis and may be the  
9 only information available, but they do not establish photographs and repair bills alone  
10 provide accurate enough information to achieve reliable results from EDCRASH or any  
11 other collision reconstruction software.

12 Additionally, *Hiropoulos v. Juso*, cited by Mr. Probst, is unpersuasive and does  
13 not support his contention that photo analysis provides sufficient data to reliably use  
14 EDCRASH. In *Hiropoulos*, the accident analyst had access to dash cam footage of the  
15 collision, an event data recorder from one of the vehicles, and photographs of the  
16 vehicle damage. *Hiropoulos v. Juso*, No. 2:09-CV-307, 2011 WL 3273884, at \*1 (D.  
17 Nev. July 29, 2011). The decision in *Hiropoulos* to admit expert analysis of the collision  
18 relied on the additional video and electronic data available to aid the investigator in the  
19 absence of measured deformation. *Id.* at \*3.

20 As described above, although the Supreme Court does not require the trial court  
21 to follow a checklist, under *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579,  
22 593-594 (1993), the Court considers: (1) whether the technique has been tested; (2) if  
23 the technique has been peer reviewed; (3) the known or potential error rate; and (4)  
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1 whether the technique has been generally accepted in the relevant scientific community.  
2 *Id.* In this case, the EDCRASH program is weakly validated and used by Mr. Probst in a  
3 way inconsistent with the validation and user manual, therefore, the Court does not  
4 accept the program is adequately tested, peer reviewed, or accepted by the relevant  
5 scientific community. The program also does not have a known error rate when used to  
6 “reverse calculate” Delta-V from the observed vehicle damage. Therefore, the testimony  
7 of Bradley Probst based on EDCRASH calculations, as described in his report, does not  
8 meet the requirements of FREV 702 and should be excluded.

- 9 • **Mr. Probst’s sideswipe analysis is not supported by relevant data; there**  
10 **is no known error rate; and variables are not accurately measurable.**

11 The report by Mr. Probst also contains a sideswipe analysis of the collision  
12 between the defendant’s and plaintiff’s vehicles. Dkt. 72-1, Exhibit A, at 7. The  
13 defendant’s amended answer admits that the collision was a rear-end collision. Dkt. 39  
14 at 2, ll. 10-11. Even if the defendant had not admitted this was a rear-end collision, Mr.  
15 Probst’s method, like the energy crush analysis, also relies on the established principles  
16 of conservation of energy to calculate Delta-V from the energy present in the collision.  
17 Mark Bailey, et al. 104-6 *Data and Methods for Estimating the Severity of Minor*  
18 *Impacts*, J. of Passenger Cars 639, 640 (1995)<sup>7</sup>. One of the variables necessary to  
19 calculate the amount of energy in the collision at the time of impact is the deformation of  
20 the vehicles -- which is described as the “measured length of contact.” *Id.*; Amrit Toor,

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23 <sup>7</sup> This article was cited by Mr. Probst but the parties have not included it in the record. The Court has filed  
24 it as an appendix to this order.  
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1 et al. *Practical Analysis Technique for Quantifying Sideswipe Collisions*, 108 J. of  
2 Passenger Cars, 201, 217 (1999).

3 Additionally, one sideswipe collision analysis study referenced by Mr. Probst  
4 measured vehicle damage to an accuracy of 1 cm and cautioned that analysis of the  
5 vehicle damage has the potential to influence the accuracy of the analysis results. See  
6 Amrit Toor, et al. *Practical Analysis Technique for Quantifying Sideswipe Collisions*, 108  
7 J. of Passenger Cars, 201, 214 (1999)<sup>8</sup>.

8 Mr. Probst, however, did not measure the vehicle damage or view the vehicles  
9 personally. Instead, he reviewed photographs of the Plaintiff's and Defendant's vehicles  
10 and reviewed repair bills. Dkt. 72-1, Exhibit A at 4. Using vehicle damage determined  
11 from photographs and repair bills in an analysis that is susceptible to variances based  
12 on imprecise damage determinations is not a tested, peer reviewed, or generally  
13 accepted method nor is there a known or calculable error rate. Therefore, the factors  
14 identified in *Daubert* are not met and the method of determining Delta-V using a  
15 sideswipe analysis is not admissible. *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509  
16 U.S. 579, 593-594 (1993). While *Daubert* factors are not a checklist, the methodology is  
17 unreliable because of the deficiencies of using photographs and repair estimates in a  
18 sideswipe analysis to determine Delta-V.

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24 <sup>8</sup> This article was cited by Mr. Probst but the parties have not included it in the record. The Court has filed  
25 it as an appendix to this order.

- **There is no data to support Mr. Probst's assumption of a constant rate of acceleration to calculate applied force**

The Delta-V value is integral to Mr. Probst's proposed testimony but is not the parameter used in causation analysis. The relevant portion of the collision analysis for purposes of analyzing whether it is relevant to causation, is the force applied to the Plaintiff's vehicles, which Mr. Probst describes in g-force, a measure of force as compared to the force exerted by the Earth's gravity. Dkt. 72-1, Exhibit A at 6.

To calculate the g-force experienced by the Plaintiff's vehicle, Mr. Probst assumes the Defendant's vehicle has a speed of 10 m.p.h. at the time of impact, the plaintiff's vehicle has a speed of 10 m.p.h. after the impact, and the plaintiff's vehicle's rate of acceleration is constant over 150 milliseconds. *Id.* This results in the Plaintiff's vehicle being subject to approximately 3.0 g's of force. *Id.*

But the assumption made by Mr. Probst that the lead vehicle in a rear-ending collision will accelerate at a constant rate is contradicted by the data obtained from collision reconstructions. Specifically, the CALSPAN Corporation data used in the Day and Hargens EDCRASH validation study includes accelerometer measurements of the front car in a rear end collision which show the acceleration is not constant. Norris Shoemaker, *Research Input for Computer Simulations of Automobile Collisions, Vol. II.*, 9-46 CALSPAN Corporation Advanced Technology Center (1978). The report by Mr. Probst does not explain why a constant acceleration was assumed. This is significant because the force, measured in g's<sup>9</sup>, applied to the Plaintiff's vehicle is proportionate to

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<sup>9</sup> Rhett Allain, *What is G-Force?*, Wired (June 6, 2012), <https://www.wired.com/2012/06/what-is-a-g-force>.



1 the acceleration of the Plaintiff's vehicle. The method used by Mr. Probst to calculate  
 2 the g-force applied to the plaintiff's vehicle is contradicted by available data and is not  
 3 supported by other peer reviewed methods, therefore, this method of calculating g-force  
 4 does not meet the standards of FREV 702 and is not admissible.

5 In conclusion, when the Court considers the factors in the holistic approach used  
 6 in *Daubert*, *Kumho Tire*, and other precedent, the Court concludes that Mr. Probst's  
 7 proposed expert opinion evidence is "unscientific speculation", *Kirstein v. Parks Corp.*,  
 8 159 F.3d 1065, 1067-1069 (7th Cir. 1998), and the necessary foundation has not been  
 9 presented.

10 **3. The proffered expert evidence is not relevant to the elements of**  
 11 **negligence as defined by state law; even if relevant, it would be**  
 12 **inadmissible under FREV 403.**

13 FREV 401 provides that evidence is relevant if "it has any tendency to make a  
 14 fact more or less probable than it would be without the evidence," and "the fact is of  
 15 consequence in determining the action."

16 To prove a negligence claim, a plaintiff must prove the existence of duty, breach,  
 17 and injury; "and the breach of duty must be shown to be a proximate cause of the  
 18 injury." *Baughn v. Honda Motor Co.*, 107 Wn.2d 127, 142 (1986). A cause is a  
 19 proximate cause if, "in a natural and continuous sequence, unbroken by any new,  
 20 independent cause, [it] produces the event, and without [it,] that event would not have  
 21 occurred." See *Graham v. Pub. Emps. Mut. Ins. Co.*, 98 Wn.2d 533, 538 (1983).

22 Proximate cause consists of both cause in fact -- the connection between the act and  
 23 the injury -- and legal causation. *Baughn*, 107 Wn.2d 127 at 142. The question of cause  
 24  
 25

1 in fact is generally a question for the jury, unless the facts are undisputed and  
2 reasonable minds could not differ, in which case cause in fact may be decided as a  
3 matter of law by the court. *Id.*

4 In this case, the parties dispute whether Mr. Dragos's injuries have the required  
5 causal relationship to the accident. Dkt. 65 at 1-2; Dkt. 70 at 10. The defense intends for  
6 Mr. Probst's testimony to assist the jury in determining "if this specific accident caused  
7 Plaintiff's specific injuries." Dkt. 70 at 11. Defendants assert Mr. Probst's testimony is  
8 intended to opine only on the biomechanics of the impact experienced during the  
9 accident and forces experienced in day-to-day life. Dkt. 70 at 7.

10 Foundational facts, connecting the scientific methodology to the material factual  
11 issues in a specific case, are required in order for expert evidence to have relevancy.  
12 *Trevino v. Gates*, 99 F.3d 911, 922 (9th Cir. 1996). As discussed above, the factual  
13 foundation has not been provided, because: (1) the software used to provide Mr.  
14 Probst's facts was validated with cars significantly different than those in the present  
15 case; (2) the method by which the software was used was not validated; (3) the method  
16 by which the software was used is contrary to the software design; and (4) the g-force  
17 applied to the plaintiff's vehicle was calculated using unverified assumptions.

18 Yet, even if the evidence proposed by the defendant to be presented by Mr.  
19 Probst would have some theoretical relevance (if the Court found there was a shaky  
20 connection to the facts, but enough to establish some amount of relevance) to  
21 causation, extent of injury, or damages, the evidence should still be excluded under  
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1 FREV 104(a), FREV 403<sup>10</sup>, and FREV 702 because it would not be helpful to the jury,  
2 would mislead the jury, and would be more prejudicial than probative. Because the  
3 evidence is not scientifically valid and the methodology is unreliable, it would only result  
4 in confusing the jury concerning how Mr. Probst's opinions relate to the issues of fact.  
5 Mr. Probst did not conduct any observation or testing on the specific cars involved in the  
6 collision that is the subject of plaintiff's lawsuit; and he does not offer a reliable  
7 explanation of how the studies he cites can be validly or reliably applied to the  
8 photographs and other information he reviewed in this case.

9 The Court does not need to reach plaintiff's argument about Mr. Probst's  
10 qualification; even if Mr. Probst has sufficient education, experience, and skill to give an  
11 opinion – in this case the opinion lacks a foundation and therefore is not relevant to any  
12 material issue of fact.

#### 13 **4. Plaintiff's percipient witness testimony**

14 The defendants also contend that if the Court excludes the expert evidence of  
15 Probst, then the Court must also exclude plaintiff's testimony concerning subjective  
16 assessment of the force of the impact. Dkt. 70 at 12-13. The defense reasoning is  
17 unpersuasive – essentially the defense argues that Mr. Probst's testimony is the only  
18 plausible explanation of impact of a collision, and suggests plaintiff as a percipient  
19 witness cannot give the jury any accurate testimony about impact. Yet testimony of  
20 plaintiff, as a percipient witness to the events that occurred in real time when the  
21 collision of vehicles happened, would be relevant to each element of negligence  
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23 <sup>10</sup> Under FREV 403, "The court may exclude relevant evidence if its probative value is substantially  
24 outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading  
25 the jury, undue delay, wasting time, or needlessly presenting cumulative evidence."

1 because it would help establish facts concerning the sequence of how the accident  
2 evolved. Any risk of unfair prejudice -- about precise details concerning impact plaintiff  
3 experienced -- may be mitigated by appropriate objections and cross-examination.

4 **C. CONCLUSION AND ORDER**

5 The plaintiff's motion to exclude the expert testimony and evidence proffered by  
6 the defendant, submitted by Mr. Probst -- plaintiff's Motion in Limine (Dkt. 65) -- is  
7 **GRANTED.** Any objection, for consideration by Judge Coughenour, to this order must  
8 be served and filed within 14 days. FRCP 72(a).

9 Dated this 14th day of July, 2021.

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Theresa L. Fricke  
13 United States Magistrate Judge  
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